Bacteraemia and antibiotic-resistant pathogens in community acquired pneumonia: risk and prognosis

Antoni Torres1 †, Catia Cillóniz1, Miquel Ferrer1, Albert Gabarrús1, Eva Polverino1, Santiago Villegas2, Francesc Marco3, Josep Mensa4, Rosario Menéndez5 and Michael Niederman6

+ Author Affiliations

1. 1Dept of Pneumology, Institut Clinic del Tórax, Hospital Clinic of Barcelona – Institut d’Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), University of Barcelona (UB) – SGR 911 – Ciber de Enfermedades Respiratorias (Ciberes), Barcelona, Spain
2. 2Dept de Medicina Crítica y Cuidados Intensivos, Universidad CES, Medellín, Colombia
3. 3Microbiology Laboratory (Centre Diagnòstic Biomèdic), Barcelona Centre for International Health Research, Hospital Clinic, Barcelona, Spain
4. 4Dept of Infectious Disease, Hospital Clinic of Barcelona, Barcelona, Spain
5. 5Dept of Pneumology, Hospital La Fe de Valencia, Valencia, Spain
6. 6Dept of Medicine, Winthrop–University Hospital, Mineola, NY, USA

1. Antoni Torres, Dept of Pneumology, Hospital Clinic of Barcelona, Spain. E–mail: atorres@clinic.ub.es

Eur Respir J 2015; 0: 1–11 | DOI: 10.1183/09031936.00152514

Abstract

The sensitivity of blood cultures in the diagnosis of bacteraemia for community-acquired pneumonia is low. Recommendations, by guidelines, to perform blood cultures are discordant. We aimed to determine the incidence, microbial aetiology, risk factors and outcomes of bacteraemic patients with community-acquired pneumonia, including cases with antibiotic-resistant pathogens (ARP).

A prospective, observational study was undertaken on consecutive adult patients admitted to the Hospital Clinic of Barcelona (Barcelona, Spain) with community-acquired pneumonia and blood cultures were obtained.

Of the 2892 patients included, bacteraemia was present in 297 (10%) patients; 30 (10%) of whom had ARP (multidrug–resistant Streptococcus pneumoniae, methicillin–resistant Staphylococcus aureus, Pseudomonas aeruginosa, and an extended spectrum of beta–lactamase producing Enterobacteriaceae). In multivariate analyses, pleuric pain, C–reactive protein $\geq$ 21.6 mg·dL$^{-1}$ and intensive care unit admissions were independently associated with bacteraemia, while prior antibiotic treatment and pneumococcal vaccine were protective factors. The risk factors for ARP bacteraemia were previous antibiotics and C–reactive protein $< 22.2$ mg·dL$^{-1}$, while pleuric pain was the only protective factor in the multivariate analysis. Bacteraemia (excluding ARP), appropriate empiric treatment, neurological disease, arterial oxygen tension/inspiratory oxygen fraction $< 250$, pneumonia severity index risk classes IV and V, and intensive care unit admission were independently associated with a 30–day hospital mortality in the multivariate analysis.
Inappropriate therapy was more frequent in ARP bacteraemia, compared with other bacteraemias (27% versus 3%, respectively, p<0.001).

Antibiotic therapy protected against bacteraemia, but increased specifically the risk of bacteraemia from ARP due to the inappropriate coverage of these pathogens. Identifying patients at risk of ARP bacteraemia would help in deciding appropriate empiric antimicrobial therapy. The results from this study provide evidence concerning community-acquired pneumonia patients in